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ABSTRACT

The study gives the findings from a careful review of the available literature on autonomy on the job, its related behavioral responses, and the socioeconomic factors in the background of the worker which vary from low to high autonomy jobs. The document also provides a list of major organizational variables which social scientists have identified as affecting success and performance, and an analysis of how the variables affect behavior. Suggestions are made about the provision of a theoretical abstraction of the variables to make them applicable in diverse organizational contexts. The study is expected to clarify partially some questions relating to talent development, occupational allocation, adaptability of workers, training of workers, worker satisfactions, and performance. Related documents are available as VT 011 591-011 595. (Author/JS)

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AUTONOMY IN WORK

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AUTONOMY IN WORK

Maria Barrados

Second Edition

A STUDY BY THE
INDUSTRIAI RELATIONS CENTRE
MCGILL UNIVERSITY

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TABLE OF CONTENTS

	Page
List of Tables	iv
Tables I-VII	v - xi
List of Figures	xii
Figure 1	xiii
Foreword	xiv
Autonomy in Work	1
General Approaches to the Study of Autonomy	2
The Definition of Autonomy	5
Theoretical Statement	10
Propositions	11
Findings Relating Autonomy and Job Satisfaction	12
Close Restrictive or Permissive Supervision and Job Satisfaction	20
Specific Examples of Autonomy in Work	24
Autonomy and Attendance	33
Implications for Retraining Workers	35
Bibliography	37

LIST OF TABLES

		Page
Table I	% of Factors Recalled of Times Workers 'Felt Good About Their Jobs'	v
Table II	Type of Work and Intrinsic Job Satisfaction	vi
Table III	Variety of Work and Intrinsic Job Satisfaction	vii
Table IV	Decisions on Job and Intrinsic Job Satisfaction	viii
Table V	Comparison of the Five Occupational Groups on the Meaning of Work (Relative Percentages Assuming each Group to have given one Response Per Person)	ix
Table VI	Comparison of Occupational Groups in Income Satisfaction with Income Held Constant	x
Table VII	The Relationship Between Supervisory Patterns and Employee Reports of Decision-Making	xi

TABLE I

% OF FACTORS RECALLED OF TIMES WORKERS 'FELT GOOD ABOUT THEIR JOBS'

	Factor	Total*	
short term duration	1. Achievement	41	(7)**
	2. Recognition	33	(18)
long term duration	3. Work itself	26	(14)
	4. Responsibility	23	(6)
	5. Advancement	20	(11)
	6. Salary	15	(17)
	7. Possibility of growth	6	(8)
	8. Interpersonal relations-subordinate	6	(3)
	9. Status	4	(4)
	10. Interpersonal relations-superior	4	(15)
	11. Interpersonal relations-peers	3	(8)
	12. Supervision-technical	3	(20)
	13. Company policy and administration	3	(31)
	14. Working Conditions	1	(11)
	15. Personal life	1	(6)
	16. Job security	1	(1)

* The percentage totals more than 100%, since more than one factor can appear in any single sequence of events.

** The bracketed figure indicates the percentage of the factors recalled which were times the workers felt bad about their jobs.

Source: Herzberg, F., et al. The Motivation to Work. p.60

TABLE II

TYPE OF WORK AND INTRINSIC JOB SATISFACTION

Type of work done by employee	Degree of Intrinsic Job Satisfaction				
	High	Medium	Low	Total	N
High level technical	58%	35%	7%	100%	31
Semi-supervisory	49	42	9	100	57
Varied clerical	35	44	21	100	142
Repetitious clerical	23	36	41	100	347
Not ascertained					3
			Total		580

TABLE III

VARIETY OF WORK AND INTRINSIC JOB SATISFACTION

Characteristics of own job liked:	Degree of Intrinsic Job Satisfaction				
	High	Medium	Low	Total	N
Employees who mention variety	41%	45%	14%	100%	159
Employees who mention other characteristics*	31	33	36	100	55
Employees who do not mention any specific job characteristics	26	36	38	100	366
				Total	580
Characteristics of own job disliked:					
Employees who mention lack of variety	8%	29%	63%	100%	130
Employees who mention other characteristics**	32	44	24	100	152
Employees who do not mention any specific job characteristics	40	39	21	100	298
				Total	580

* "Other characteristics" include: liking to be on one's own, feeling of accomplishment from the work, and a few respondents said, "Opportunity to make decisions."

** "Other characteristics" include primarily: "Having to meet deadlines," "too much work to be done," but also including some cases of people who mention: supervision, overtime, lack of advancement, working conditions, social climate, no opportunity to make decisions, and no feeling of accomplishment.

TABLE IV

DECISIONS ON JOB AND INTRINSIC JOB SATISFACTION

Degree of Intrinsic Job Satisfaction	High	Medium	Low	Total	N
Employees who report making decisions	36%	39%	25%	100%	344
Employees who report making no decisions	23	38	39	100	234
Not ascertained					2
			Total		580

Source for tables ii, iii, iv:

Morse, N. Satisfactions in the White-Collar Job. pp.56, 62-63.

TABLE V

COMPARISON OF THE FIVE OCCUPATIONAL GROUPS ON THE MEANING OF WORK (RELATIVE PERCENTAGES ASSUMING EACH GROUP TO HAVE GIVEN ONE RESPONSE PER PERSON)

Meaning	Steel-workers (Unskilled and Semi-skilled)	Coal-Miners	Skilled Craftsmen		Sales-People	Physicians
			20-64	over 65		
1. No meaning other than money	28	18	10	11	0	0
2. Routine	28	19	*	15	21	15
3.a. Self respect			30		12	7
b. Prestige, respect of others	16 (3a,b)	18 (3a,b)	15	24 (3a,b)	11	13
4. Association	15	19	18	20	20	19
5. a,b,c, Purposeful activity, self expression, new experience	13	11	28	30	26	15
5.d. Service to others	*	16+	*	*	10	32
No. of people responding	128	153	242	208	74	39

* Not covered in the questionnaire or interview

\+ "Work has given me a chance to be useful."

Source: Friedman & Havinghurst. Meaning of Work and Retirement. p.173.

TABLE VI

COMPARISON OF OCCUPATIONAL GROUPS IN INCOME SATISFACTION WITH INCOME HELD CONSTANT

Weekly Income & Occupation	Cases	Dissatis-faction	Satisfaction	No Opinion
Under $40. (a week)				
White collar	56	71%	20%	9%
Skilled & Semi-skilled	56	82	9	9
Unskilled	60	70	17	13
Farmers	80	59	23	18
On relief & Old Age Ass.	32	75	12	13
$40. - 59.99				
Semi-professional	57	61	30	9
Business	14	57	43	0
White collar	87	60	22	18
Skilled & Semi-skilled	178	51	32	11
Unskilled	61	67	26	7
Farmers	92	55	35	10
$60. & over				
Professional & Semi-prof.	62	35	52	13
Business	59	27	63	10
White collar & manag.	92	36	54	10
Skilled & Semi-skilled	55	40	49	11
Farmers	30	23	70	7

Source: Cantril & Hadly, "Income satisfaction and income aspirations", p.67.

TABLE VII

THE RELATIONSHIP BETWEEN SUPERVISORY PATTERNS AND EMPLOYEE REPORTS OF DECISION-MAKING

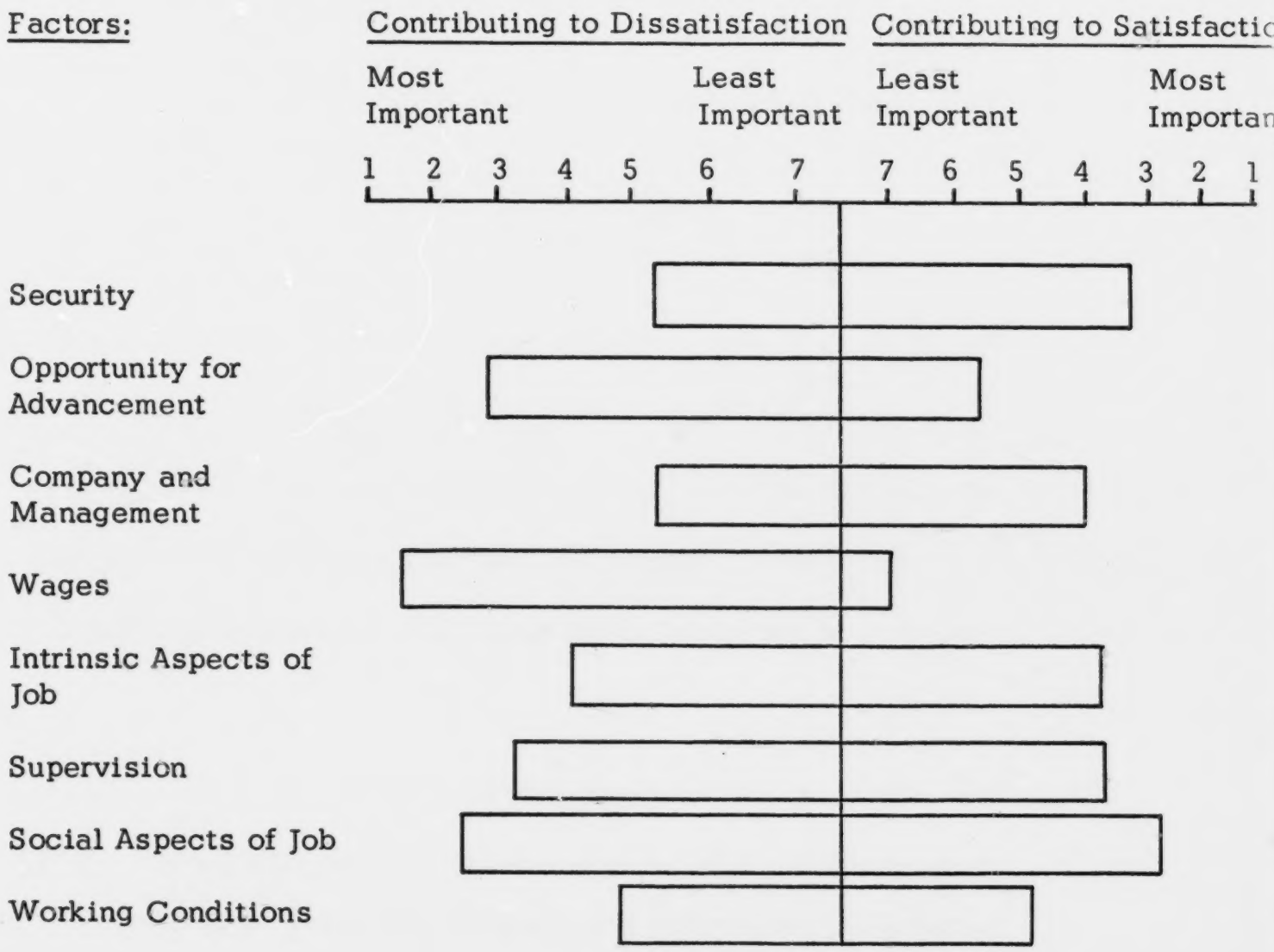
Do you make decisions on the job you are doing?	Fairly important decisions	Minor decisions	Decisions (but do not specify)	No decisions	Not ascer-tained	Total	N
Employees under general supervision	13%	32%	13%	42%	0	100%	56
Employees under close supervision	8	15	19	58	0	100	62
						Total	118

Source: Morse, N. Satisfactions in the White-Collar Job. p.133.

LIST OF FIGURES

		Page
Figure 1	Mean Ranks of Factors Contributing Either to Employee Satisfaction or Dissatisfaction (Compiled from 15 Studies Including over 2,800 Employees)	xiii

MEAN RANKS OF FACTORS CONTRIBUTING EITHER TO EMPLOYEE SATISFACTION OR DISSATISFACTION (COMPILED FROM 15 STUDIES INCLUDING OVER 2,800 EMPLOYEES)



Source: Herzberg, F. et al. Job Attitude: Review of Research and Opinion. p.43.

FIGURE I

FOREWORD

This publication is one of a series prepared under contract by the Industrial Relations Centre of McGill University for the Department of Manpower and Immigration's Experimental Projects Branch which was transferred to the Social and Human Analysis Branch of the Department of Regional Economic Expansion in July 1968.

The study includes a detailed review of the literature. It also provides a list of major organizational variables which social scientists have identified as affecting success and performance, and an analysis of how the variables affect behaviour. Suggestions are made about the provision of a theoretical abstraction of the variables to make them applicable in diverse organizational contexts.

The results of the study are intended for:

1. Classifying employment opportunities as a basis for prescribing compatible jobs for different types of people
2. Classifying the behaviour required for survival and success in various job settings
3. Identifying and classifying the variables now operating in educational and resocializing institutions
4. Specifying models for social systems in training centres.

The study is expected to clarify partially some questions relating to talent development, occupational allocation, adaptability of workers, training of workers, worker satisfactions and performance.

Dr. W.A. Westley of the Industrial Relations Centre, McGill University, directed the study. He was assisted by research assistants under whose authorship their individual reports are published.

Mr. J.M. Saulnier of the Experimental Projects Branch was responsible for the administration of the contract and the preparation of the material for printing. He was assisted by Mrs. C. MacLean.

AUTONOMY IN WORK

An attempt is made here to spell out the findings from a careful review of the available literature on autonomy on the job, its related behavioural responses, and the socio-economic factors in the background of the worker which vary from low to high autonomy jobs.[1]

The definition that has been developed from a study of the work done using concepts similar to autonomy and the concept itself includes the following four items:

1) Control over the working process, including choice of tools, work sequence, quality of materials used (Lawrence and Turner) and control over the rhythm of work (Blauner and Chinoy);

2) Freedom from close supervision (Blauner and Morse);

3) Being able to try new ideas, initiative (Blauner);

4) Variety on the job (Turner, Lawrence and Morse).

As will be pointed out in the review of studies dealing with autonomy, the relationships between many of the factors making up autonomy and behavioural response, for example, control and work satisfaction, depend a great deal on the expectations and predispositions of the workers. In some cases these expectations have been linked to an urban-Catholic as opposed

[1] For this paper at least 20 books and 12 articles were carefully reviewed, while considerably more were studied but not considered relevant to the topic.

to town-Protestant environment and education. William F. Whyte[1] emphasizes the importance of knowing something of the past types of activities and of the social context of these activities in understanding the present behaviour of the worker. The variation of responses in the relationship between the various aspects of autonomy, and the behavioural responses within the same occupational group in the same industry, appear to depend a great deal on the expectations and the predispositions of the worker that were likely formed outside of the present job (although they could also be influenced by the present job).

GENERAL APPROACHES TO THE STUDY OF AUTONOMY

1. Studies dealing with varying amounts of autonomy which exist. These studies have pointed to extensive variability in degrees of autonomy relating to:

a. Type of work or the job itself. Often the question becomes, "How much autonomy is there within the technically defined requirements of the task of each job?" Studies such as the ones done by Blauner, Turner, Lawrence and Herzberg, look at the intrinsic factors of the job, that is the factors such as amount of variety, autonomy, responsibility, amount of interaction, etc., that are built into the job. In Alienation and Freedom, Blauner uses this approach to study alienation responses by the workers as a result of the technically defined freedom in their job. One part of his alienation measure is the amount of autonomy allowed the worker; his study emphasizes the difference in autonomy between assembly line workers, one extreme, and the printing craftsmen and the chemical workers, another extreme.

---

[1] William Foote Whyte. Men at Work.

b. Position in the organization. The lower one goes in the hierarchy of the organization the greater the probability that behaviour is controlled by the technology and organizational structure of management (Argyris). Some laboratory studies have been done to determine the degree of autonomy structurally through the amounts of communication between the participants (D. Trow).

c. Type of supervision. Some supervisors encourage the exercise of autonomy among their workers, while others do not. The problem is determining which is cause and which the effect. From studies that have tried to solve this problem, supervision seems to be an important variable.

d. Type of organization of industry. Case studies show differences by industries. Etzioni points out the differences in organizations, the type of commitment and amounts of autonomy allowed.

2. Autonomy as a need of the worker. Argyris and Herzberg, for example, postulate a major need or series of needs that are part of the psychological makeup, to varying degrees, of every worker. The need could be strong or weak depending on the individual worker. In a review of the literature on employee needs, Applewhite developed a table showing the needs postulated by various researchers in the study of different occupations. Some of the needs that are mentioned in the table would be similar to autonomy as we have defined it; for example, creativity and challenge, self-expression, independence (for the professional), components of the work itself, and aspects of responsibility. The possession of many of these needs leads to satisfaction as well as to dissatisfaction as can be seen from the description given in the table.

3. Several studies extend the examination of the intrinsic components of the jobs to a study of the satisfaction of the worker with the various job components. This type of study does not usually discuss the

EMPLOYEE NEEDS (RANK ORDERED)

Schaffes	Herzberg et al.	Myers					
Professional Men	Engineers and Accountants	Engineers	Scientists	Manufacturing Supervisors	Technicians	Female Assemblers	
1. Creativity and challenge	Achievement	Work Itself +	Responsibility -	Advancement +	Responsibility +	Competence of supervision	1.
2. Achievement	Recognition +	Responsibility	- Work Itself +	Responsibility	Advancement +	(Recognition	-2.
3. Social welfare ("need to help others")	Work Itself +	Company policy and administration	- Company policy and administration +	Pay -	(Pay	- Security)	-3.
4. Moral value scheme (need to have behaviour agree with this scheme)	Responsibility +	Pay	- Recognition +	Achievement -	Work Itself)	- Friendliness of supervision	+4.
5. Interpersonal relationships	Advancement +	Advancement	+ (Competence of supervision	Possibility growth +	Company policy and administration	+ Pay	+5.
6. Self-expression	Salary	Recognition	Advancement)	Friendliness of supervision -	Achievement	Achievement	+6.
7. Dominance	Possibility of growth	(Achievement)	Achievement	Company policy and administration	Competence of supervision	- Work Itself	7.
8. Recognition	Interpersonal relations (subordinates)	(Competence of supervision) -		(Competence of supervision)	Recognition	(Company policy and administration)	-8.
9. Economic security	Status	Friendliness of supervision -		Peer relations)		Peer relations)	-9.
10. Independence	Interpersonal relations (superior) -			Recognition +			10.
11. Socio-economic status	Interpersonal relations (peers)						11.
12. Dependence	Supervision-technical -						12.
13.	Company policy and administration -						13.
14.	Working conditions -						14.
15.	Factors in personal life						15.
16.	Job security						16.

Key: those in parentheses are nearly equal in rank;

+ lead to satisfaction (primarily);
- lead to dissatisfaction (primarily);
those unmarked are bipolar (primarily).

Source: Philip B. Applewhite

needs of the workers, but rather his satisfaction (dependent variable) with the various parts of his job, for example, the study by Morse, Lawrence and Turner.

Although the above three areas have been presented as if each study would be a simple example of one type, this is not the case. Many studies deal with several of these approaches at the same time; these three areas are clearly not mutually exclusive.

For the purposes of this paper the starting point of the discussion and definition is from the task itself, that is, the amount of autonomy built into the task and the related behavioural responses, and the socio-economic background factors of importance to expectations and predispositions regarding autonomy. This approach does not deal directly with social organizational differences, or the role played by the occupational or professional groups in altering the relationship between autonomy and behavioural responses, although occupational differences, of course, will be accounted for.

THE DEFINITION OF AUTONOMY

As has been outlined on page 1, the concept of autonomy as used here means that for the autonomous position the worker has control over: the work process (including choice of tools), work sequence, quality of materials used and control over the rhythm of the work; is free from close supervision; is free to try new ideas and initiative on the job; has work that offers a variety of tasks to be performed.

In several studies on job satisfaction, the factor of autonomy has been included in the category of intrinsic satisfaction, general working conditions and type of work (for example, see Applewhite, p.21) without further specification. However, in other studies where the concept has been specifically used, each author has used slightly different definitions. I shall briefly review the meanings given to the concept of autonomy to set the definition developed here in the context of the other work that has been done.

1. General references to the concept:
   a. reasonable freedom on the job (Miller and Form);
   b. personal independence on the job (Centers);
   c. no choice or control over the work process and no freedom to make decisions regarding work and inputs (Friedmann).

2. Autonomy in a laboratory setting:
   d. Trow did a study relating worker satisfaction and the job autonomy in a laboratory setting. The author feels that his use of the concept and his general finding could be applied to business and industrial studies of these same factors. He defined autonomy as:

> the degree to which a person's position in the information flow of an organization permits him to determine for himself the organizationally appropriate level or direction of his own future activity (p.204, D. Trow).

The emphasis in Trow's definition, unlike all the others that are being discussed, is that autonomy is defined by the organizational

structure. Part of Trow's operationalization of his concepts takes into account the need for autonomy of each of the individual participants in the experiments that were carried out. The second part of his definition, the ability of the worker to be able to <u>determine for himself</u> the organizationally appropriate level or direction of his future activity, is a common element running through all the other definitions usually expressed in terms of freedom from control or domination.

3. Direct use of the concept of autonomy:

a. Blauner conceives of the worker experiencing his work in terms of four major dimensions:

1. control or domination;
2. meaningful purpose or futility;
3. social connection or isolation;
4. spontaneous involvement and self-expression or detachment and discontent.

(p.1, <u>Alienation and Freedom</u>)

Work inherently involves the surrender of some control by the worker. The most pronounced surrender of control is for the manual worker who is limited in his opportunity to originate activity. Blauner defines control as follows:

> Control over the use of one's time and physical movement, which is fundamentally control over the pace of work process, control over the environment, both technical and social, and control as the freedom from hierarchical authority (p.118, Blauner in Wm. J. Goode, <u>The Dynamics of Modern Society</u>).

The area of control that we are most interested in is that dealing with the areas defined by the task itself, and the amount of freedom from hierarchical authority.

Throughout Blauner's typology of work experience runs the freedom-alienation dichotomy which is what Blauner specifically set out to study. The part of his analysis that deals with 'control-domination or powerlessness' and 'meaningful purpose or futility' deals with phenomena which are part of a study of autonomy. Blauner's concept of 'meaningful purpose' or 'futility', in a discussion of autonomy as defined by the task tends to be more a consequence of lack of control over the task (in addition to introducing other factors that would not be dealt with directly such as organizational or craft identification and opportunities for advancement). The worker who is powerless is one who has no responsibility in the form of problem solving or decision making; he is highly supervised, controlled by machine processes and machine pace; he is not allowed to experiment with new ideas or try new techniques.

From Blauner's work in viewing a task in terms of its autonomy for the worker the factors that emerge are:

1. control over the machine and over the job, in general, with limited supervision;
2. being able to make decisions and solve problems (very much linked to 1);
3. being able to try new ideas.

b. The study by Turner and Lawrence used the elements of behaviour scheme developed by George Homans. The elements of the work task considered under 'activity' were labelled 'variety' (object and motor) for the prescribed part of the task and autonomy for the discretionary part of the task. (See pages 27 and 28 for their complete theoretical scheme.) The distinction that is made between the prescribed and discretionary is as follows:

> ... by Prescribed we mean that part of the task behaviour that is programmed, predesigned or predetermined. By Discretionary behaviour we mean that within the prescribed limits certain other behaviour can exist at the discretion of the individual (p.20, Turner and Lawrence).

The prescribed behaviour is what the person must do, whereas the discretionary behaviour is an area of choice.

Autonomy is then defined by Turner and Lawrence as follows:

> Autonomy refers to the discretion the worker is expected to exercise (assumed in the design of the job) in carrying out the assigned task activities. This would include the <u>degree of choice of judgement</u> necessary in regard to the quality of material used, <u>selection of appropriate tools</u>, and the <u>sequence</u> in which the different parts of the task were performed. Here we are thinking of a range of work with low autonomy even if varied, such as the highly programmed job of a missile crewman performing a count-down, to work requiring considerable exercise of judgement as to quality, methods etc., such as a high-quality glass blower's job (p.21, Turner and Lawrence).[1]

[1] Underlining mine.

The rank correlation (Kendall with $p < .002$) between object variety and autonomy as scored by the researchers for various jobs on observation was .46 and the correlation between motor variety and autonomy .52 (p.166, Appendix D, Turner and Lawrence). These correlations would justify maintaining the variety measure apart from autonomy, or at least a distinct measure that would not necessarily mean the same as control and decision making on the job.

The automobile assembly line worker is an example of the worker with very little variety and low autonomy on the job. However, the assembly line worker may have increased variety by working on several different parts of the car without having increased autonomy, as Turner and Lawrence would argue. Variety, in their conceptual framework, does not necessarily mean increased decision making and more control. Although, conversely, it is difficult to think of an example of a worker who has high autonomy and no variety on the job. We would expect there to be high variety for high autonomy jobs.

THEORETICAL STATEMENT

The strength of the relationships between autonomy (or its components, control over the job, type of supervision, amount of decision making, and variety) and behavioural responses, such as job satisfaction and attendance depend on the past learning and expectations of the workers. Professionals (rural and urban), skilled craftsmen, sales people and generally

rural and town workers expect higher autonomy on their job. They would have more difficulty in transferring to low autonomy jobs and would likely express strong dissatisfaction if the autonomy on their job were reduced.

Learning to expect autonomy on the job takes place in the general community (those from town-Protestant backgrounds expect and usually have higher autonomy on the job), the school, and the professional training of the worker (more years of education is associated with higher expectations for autonomy. This is particularly true of those who have received professional training).

Autonomy, of course, is only one consideration in a study of factors important in the work world. Consistently stronger emphasis appears to be placed on factors such as wages and job security than on autonomy.

PROPOSITIONS

1. Workers with high autonomy jobs are more satisfied with and interested in their work.

2. Increased autonomy is associated with a) increased skill;
   b) increased education;
   c) increased seniority.

3.a. Rural workers having held high autonomy jobs, workers with higher education (such as professionals, skilled craftsmen, sales people) hold expectations for high autonomy on the job.

b. Urban workers express less dissatisfaction with low autonomy (particularly low variety) jobs than rural workers.

4. The expectations and predispositions of the worker would considerably alter the relationships suggested in 1.

5. Considerations such as wages and job security keep a worker dissatisfied with low autonomy in his job from changing to another one.

6. Low autonomy jobs are associated with increased technology and rationalization of industry only for unskilled or semi-skilled workers.

A review of the studies on job autonomy will be made pointing out the findings or implications on the relationship between job satisfaction and autonomy. The factors which we consider to define autonomy are not necessarily part of the definition of autonomy by other authors. In many instances, however, the definition of autonomy that is used may deal with one of the factors that we have mentioned. In all cases, of course, in discussing the findings of other men, their definitions of the concept will have to be used.

FINDINGS RELATING AUTONOMY AND JOB SATISFACTION

1. General reviews of workers' attitudes by Herzberg et al.:

a. Job Attitudes: Review of Research and Opinion

In review of the studies done on job attitudes (1957) Herzberg et al. use the category of 'Intrinsic Aspects of the Job' as one of the ten major factors that have been mentioned in the literature as relevant aspects of the intrinsic job factors; eight are part of our definition of autonomy:

1. freedom and independence of research, action and planning;
2. creativity and self-expression;
3. opportunity to participate in decisions;
4. responsibility and authority;

5. thought and attention;
6. variety or repetition, specialization;
7. work load and routine demands, distribution of work;
8. speed requirements (p.39, Herzberg).

The second major factor that Herzberg found was supervision. Of the twenty-three items that define this concept two are particularly relevant in the light of our definition: (1) permissiveness, closeness and (2) delegation of authority (p.39, Herzberg).

From the kind of work that Herzberg did in reviewing the studies on job attitudes up to 1957, it can be seen that general findings indicate that factors making up the intrinsic job satisfaction measure (including autonomy) contribute just as frequently to satisfaction as to dissatisfaction, as seen in Figure 1 where these relationships are graphically presented. However, attempts to isolate the relationships between job satisfaction and autonomy leave an equally unclear relationship. In addition, the intrinsic job aspects are not given the priority of other factors such as wages (negative) and security (positive).

b. Motivation to Work

In the study of a sample of two hundred accountants and engineers, all workers were interviewed and asked to recall the times that they felt good about their jobs and the times that they felt bad about their jobs. The specific instances that were recalled were then further investigated. The factors mentioned with the most frequency are the first six as can be seen in Table 1. By work itself, the items mentioned in this category were similar to the concept of autonomy.

> For the work itself category our respondents described aspects of their jobs which gave them tremendous satisfaction. These aspects were related to the nature of their work and were rewarding in themselves with or without specific achievement or recognition. Frequently cited desiderata were creative or challenging work, varied work, and an opportunity to do a job completely from beginning to end (p.61, Herzberg, Motivation to Work).

The author strongly emphasizes that good feelings (satisfaction) about the job, were the result of the job itself and not the context of the job. In an analysis of the factors which described what the events recalled by the workers meant, the authors felt that the positive feelings about work were related to a sense of personal growth and self-actualization by the worker.

In Table I the bracketed figure indicates the percentage of the factors recalled which were times the workers felt bad about their jobs. The work itself category for professional engineers and accountants leads both to satisfaction and dissatisfaction but in this instance, more frequently to satisfaction although the difference is not statistically significant.

The sample of the study of accountants and engineers showed no difference in results for the two different professional groups. It is important to keep in mind, in comparing the findings of this study with other studies, that this was done entirely on two professionally trained groups of people. As will also be shown in other studies, the professionals by and

large have a great deal of autonomy, value it more highly than other workers and would also likely be the most dissatisfied if it were taken away from them or reduced in any way.

2. Morse, Job Satisfaction of Clerical Workers

Nancy Morse studied job satisfaction of clerical workers who were predominantly single, female, American, urban residents, high school graduates. Two-thirds of them had their first jobs with this company, all of them were white collar workers although 62% of them were doing routine clerical work (p.8, N. Morse). The study was conducted by structured interviews. To Morse, the four satisfaction areas that the worker experiences in any job are:

a. the actual job;
b. work group;
c. the company;
d. pay and job status.

From her measures of job satisfaction and the descriptions of the jobs that the girls did, she found that those who were the most skilled, whose jobs had greater variety, and had the most opportunity for making decisions,expressed higher satisfaction than those whose jobs did not have these characteristics.

As seen in Table II, taken from Morse's study, the greatest satisfaction is among those office workers performing skilled tasks and the greatest dissatisfaction among workers doing repetitious jobs. Morse controlled this relationship for group morale, age, length of service and

salary, but the relationship between type of work and intrinsic job satisfaction[1] still remained, although somewhat weakened by the controls.

In comparing those who were satisfied with those who were dissatisfied, job variety and lack of variety significantly related to intrinsic job satisfaction (pp.61-62, Table III). Those who make decisions on the job are more often in the high or medium groups of job satisfaction, while those reporting no decision making are often in the medium or low satisfaction groups. The relationship between decision making and intrinsic job satisfaction is not very strong as can be seen in Table IV.

The basic position that Morse takes at the beginning of the book is that the satisfaction of the worker depends basically upon what an individual wants from the work and what he gets. To measure the influence of expectations on the relationship between intrinsic job satisfaction and decision making (in addition to asking the question, "Do you make decisions in the job you are doing?") they are also asked: "Would you like to have a job in which you make (or make more) decisions?" In terms of aspiration levels of the workers "the most job-satisfied are those who make some

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[1] Intrinsic Job Satisfaction was scored by the responses to the following questions on a five-point scale. 1. How well do you like the sort of work you are doing? 2. Does your job give you a chance to do the things you feel you do best? 3. Do you get any feeling of accomplishment from the work you are doing? 4. How do you feel about your job? 5. Does it rate as an important job with you?

decisions and would not like to make more. The next most satisfied are those who make no decisions and would not like to make any."

The importance of the concept of autonomy in relation to job satisfaction depends very much on the expectations and the aspirations - early socialization - of the worker. The impact of these factors is seen on the relationship between decision making and the measure of intrinsic job satisfaction.

3. Occupational Differences by Friedman and Havinghurst

In a discussion of the relationship between components of autonomy related directly to the meaning of the job and worker satisfaction, the findings of the difference by occupations is expected to be quite great. Friedman and Havinghurst, in their investigation of the meaning of work clearly found these occupational differences appearing.

The Friedman and Havinghurst group was composed of workers over fifty-five. The main concern was to find the meaning of work (in the authors' terms, functions and needs filled by work) for each worker. One of their categories was "meaningful life experience" which refers to:

> Work as an intellectual experience ... one which presents a problem and challenges the individual to solve it, which provides the stimulus of new situations, new ideas. new experiences, and which enables him to evaluate the routine work in such concepts as purpose, achievement, responsibility and usefulness (p.175, Friedman and Havinghurst).

The notion of new experience is quite similar to the aspect of autonomy that deals with problem solving. The various occupational groups that were studied

were studied roughly within the same conceptual scheme. Most of the studies, however, were done by unstructured interviewing; thus they are not all fully comparable. Table V shows the higher frequency of mention of the job attribute "meaningful life experience" for skilled craftsmen and sales people. Both these jobs are generally characterized by high autonomy (see Blauner).

The indirect measure of the workers' satisfaction could be the authors' concern with whether men in certain occupational groups would work, or are working past the retirement age. Those that would be satisfied with their jobs would be expected to want to continue working (whether they could or not is not the question) although there are many other factors, of course, that can enter into this relationship.

% OF MEN BY OCCUPATIONAL GROUP WHO WANTED TO CONTINUE TO WORK PAST AGE SIXTY- FIVE	
Occupational Group	%
unskilled and semi-skilled steelworkers	32
coal miners	42
skilled craftsmen	49
department store salesmen	65
physicians	67

The hypothesized relationship does exist between task attributes and desire to retire; however, the relationship, particularly for skilled craftsmen, is not as clear as might be expected. It would be here that the importance of expectations and aspirations of the individual worker as discussed by Morse would probably be a helpful explanatory tool.

4. Income Satisfaction and Autonomy

From a public opinion survey from Princeton which had a national (American) representative sample, Centers and Cantril made a study of income satisfaction and income aspirations. Among their findings it is shown that:

> By and large, income is a more reliable index of satisfaction and desire than occupation is. There is, however, a tendency for persons in those occupations providing greater personal independence to be satisfied in all income levels.

As can be seen from above, the importance of greater personal independence is particularly noticeable for the farmers. Farmers gain satisfaction from their earnings, as the other workers do, but additional satisfaction is gained from having an autonomous job.

5. Study of Autonomy and Job Satisfaction in a Laboratory Setting

Each participant completed a need questionnaire in addition to participating in a controlled experiment on autonomy and job satisfaction based around the task of paper cutting. His findings were that the greater the individual's autonomy, in terms of the position he occupies in the information flow, the higher the satisfaction. This relationship operates through a need for autonomy (as determined by the questionnaires), a higher need producing a stronger relationship. It was also found that a 'relatively' high degree of autonomy is characteristic of positions centrally located in a communication net. Trow speculated that autonomy may be considered a mediating variable between centrality and satisfaction, which is a relationship that has been found in other laboratory experiments in addition to Trow's findings.

CLOSE RESTRICTIVE OR PERMISSIVE SUPERVISION AND JOB SATISFACTION

Herzberg, in his review of job attitudes up to 1957, reports the findings of two studies looking at this relationship. Restrictive supervision is defined as limiting the amount of freedom of the employee and permissive supervision encouraging a considerable amount of freedom.

1. Permissive leadership and increased satisfaction

The first study by Irving R. Weschler, Murry Kahane, and Robert Tannenbaum, ("Job satisfaction, productivity and morale: a case study." Occup. Psychol., Lond., 1952, 26, pp.1-14) compared two divisions of a naval research laboratory. Productivity was not actually measured in this study. From observation, morale was considerably higher in the group under the permissive leader than under the restrictive leader. "The authors state that although the permissive leader had more satisfied employees, he used them in the performance of tasks which his superiors did not consider of primary importance to the laboratory" (p.180, Herzberg). In this instance, not only could the type of supervision be a contributing factor to increased group satisfaction, but also increased task variety could be contributing to increased satisfaction. The possibility of satisfaction from deviance from central policies should not be discounted. In addition, the permissive leader was also considered to be more popular among the workers than the restrictive leader.

2. Restricted freedom and job satisfaction

The second study by Herzberg does not present the clear findings of the Weschler, Irving and Tannenbaum study. This study by C.M. Arensberg and Douglas McGregor ("Determination of morale in an industrial company." Appl. Anthrop., 1942, 1 (2), pp.12-34), investigated

a case of bad morale among engineers in a department which was structured so that each man had almost complete freedom. Supervision was by a committee that checked research plans and general progress.

> While the men were given considerable independence - a fact which was striking when first employed - it later became increasingly apparent that they were still pretty well in a pattern rather unconsciously applied by the board. Also, there were no increases in freedom and responsibility with longer service (p.181, Herzberg).

The apparently flexible immediate supervision pattern was of secondary importance to the restrictive pattern that was subtly applied on over-all activities.

As pointed out by the study by Arensberg, knowledge of the immediate supervision,for many professionals in particular, may not be the particular aspect of supervision to be looking at although the importance of supervision in relation to satisfaction is still maintained.

3. The role of the supervision and the autonomy of the workers

In the comparison of factors contributing to favourable memories (Table I) Herzberg et al. in Motivation to Work point out the significant difference in the frequency of recall of factors relating to supervision. Although not mentioned explicitly by the respondents in the study, the authors point out what they term a subtle aspect of supervision that they feel is of extreme importance (pp.134-135). The authors feel that a successful supervisor "was often instrumental in structuring the work so that his subordinates could realize their ability for creative achievement" (p.135, Herzberg, Motivation to Work). This is particularly the case, the authors argue, in modern industry where there is an increasing technological interdependence of the workers created by the rationalization of industry.

4. Morse, Importance of employee expectations

In the previously mentioned study on job attitudes by Nancy Morse, she included a section on supervisory practices and employee attitudes. The interviews with the supervisors (all white collar, clerical, female) were coded along six dimensions of supervisory traits and employee orientations. Two of the dimensions of particular interest in terms of the study of autonomy are the ones that deal with the 'closeness of supervision and of the subordinates' freedom of conduct permitted to employees' (p.129). The intercorrelation of the other dimensions of supervision under study, showed that the factor of 'closeness of supervision' is the one that is the most related to the other items that were measured.

> Those who supervise closely also tend to delegate little to their employees, exert considerable pressure on their staff, think of their employees as primarily people to get work done, allow little freedom of conduct and have rather cold personalities (pp.129-130, Nancy Morse).

To test the differences with the generality pattern of supervision, that is,

> if their supervision was either in some way general, fairly general or quite general, if they delegated almost everything, had a fairly high degree of delegation or were about average in this respect, if they exerted little or no pressure on their staff, considered them as individuals rather than primarily as producers, permitted their employees a high degree, a fairly high degree or an average amount of freedom and were very warm or fairly warm personalities (p.132, Nancy Morse),

fifty-six employees under the general pattern were studied and sixty-two employees under the closeness pattern. The two groups were alike in many ways, both in background characteristics and basic type of work situation.

When these two groups were compared to see which made the most decisions, it was found that neither group really made important decisions. But more employees under the general supervision pattern made minor decisions and more of the workers under the close supervision made no decisions (see Table VII).

The author points out that the variation shown in her findings is not as great as might be expected, considering the very different orientations under consideration. She argues, however, that in this type of work situation the decisions regarding the basic structure are made by people other than the supervisor.

When the relationship between type of supervision and the expectations of the amount of decision making to be allowed are correlated, both groups of employees wanted to make more decisions, but the employees under the general pattern of supervision are more often satisfied with the amount of decisions that they are making.

The relationship between supervisory pattern and satisfaction (intrinsic job satisfaction as described on p.14) is not in the expected direction.

> The general supervisory pattern produces certain more favourable attitudes towards supervision and greater work group identification, yet it evidently results in lower intrinsic job satisfaction and lower financial and job status satisfaction (p.138).

THE RELATIONSHIP BETWEEN SUPERVISORY PATTERNS AND EMPLOYEE MORALE

	Index Averages by Type of Section				
	A	B	C	D	mean
employees under general supervision	10.8	9.2	12.5	11.8	11.1
employees under close supervision	9.6	8.5	10.6	12.0	10.2

The higher the score, the more negative the attitude. Scores range from 4 to 20. The paired T test method was used. The significance was above the 5% level of confidence.

The author speculates that the inverse relationship is perhaps explained by different levels of aspiration in the two groups. General supervision may raise the aspiration and expectation of the employees.

> People who are treated as individuals and given freedom and responsibility probably expect their needs to be taken into account more than people who are treated as cogs in a machine. When their needs are not taken into account they will be dissatisfied (p.140, N. Morse).

In studies such as Gouldner's Patterns of Industrial Bureaucracy, the difficulty of measuring the relationship between closeness of supervision and job satisfaction is stressed. The argument is presented that close supervision is often the result of bad morale and dissatisfaction among the workers rather than vice versa. The fact that Morse's findings are opposite to what might be expected lends more credibility to them.

SPECIFIC EXAMPLES OF AUTONOMY IN WORK

1. The automobile workers

The automobile assembly line worker is the classical example of the worker on the low autonomy job, with high dissatisfaction. Studies such as the one done by Ely Chinoy, Automobile Workers and the American Dream have pointed out, the type of job that the assembly line worker does is generally negatively defined in our society as being an unsatisfactory job.

In addition to the general dissatisfaction of the job there is cultural stigma against monotonous repetitious work. To varying degrees, general cultural values bear on the definition of all jobs and their related worker satisfaction, but this is particularly the case for the automobile workers. It is notable however, that in a study done by Turner and Lawrence, city workers did not express dissatisfaction with repetitive, monotonous jobs.

Chinoy gathered his data by intensively interviewing seventy-eight automobile workers. Only ten per cent of the automobile workers are in skilled jobs.

Through mechanization and rationalization of the automobile industry, a great deal of the control of the work task went to the engineers and technicians, leaving the worker with "little chance to exercise judgement, assume responsibility or develop significant skills" (Chinoy, p.34). The low autonomy of the jobs of the men of the assembly line that Chinoy interviewed is brought out in the following description:

> Routinized jobs and standardized wage structure take away men's uniqueness and reduce them to anonymous entities who can be easily managed and manipulated in accordance with the needs of a constantly changing technology (p.34, Chinoy).

The job of the automobile worker has little variety and is controlled by those who are technicians in the everchanging technology. The worker has no control over inputs, order of work or rate of speed - these are all set for him. Chinoy found in his interviews that men preferred work at a machine which could be just as repetitive and require as few motions and thought as the work on the assembly, because at machines the workers were not tied to their tasks, so that they would have to get a replacement if they wanted to go to the washroom (p.71, Chinoy).

Dissatisfaction among these workers was high; nearly four-fifths of the workers interviewed had at some time contemplated leaving. The majority of them wanted to go into small business or farming. Chinoy explained the frequent choice of these two occupations in terms of the factors that the workers felt were missing in their own jobs.

> In both small business and farming, workers see an opportunity to gain what they rarely achieve in the factory, a rich and full sense of self. The variety of tasks and the individual control of the tempo at which one works in a business or on a farm contrast favourably in the worker's eyes with routine factory jobs. The traditional stress upon "independence" and the desirability of "being one's own boss" strikes a resonant chord among the workers subject to the authority of the organization and the mechanical domination of the machine (p.86, Chinoy).[1]

Chinoy casts some doubt on the strength of the workers' dissatisfaction by stating that of the thirty-one interested in starting a business, twenty-one said that they could not leave the factory for reasons based primarily on the regularity of wages and the security of a certain job.

Blauner in Alienation and Freedom presents a similar picture of the automobile worker although he adds that the workers, presumably those that have the greatest need for autonomy, are "forced to innovate illegitimate, subterranean arrangements in order to maintain some control over the work pace" (p.99). The example that Blauner gives is that of the process of 'doubling-up' on the job.

2. Blauner's comparison of occupations

In Alienation and Freedom Blauner compares and contrasts several different jobs to present the differences in control over the job and

[1] This is the same approach taken by Argyris.

work process, differences in amount of decisions that are made and, indirectly, differences in amounts of variety.

The printer is the worker with the maximum amount of freedom and a minimum of alienation. He has a great deal of control over his environment and the work process. He is a skilled worker who has high personal control over the job, with complementary low supervision. The printer is also given considerable initiative in trying out new ideas in his work.

The printer is an example of a traditional craftsman who is supported by the other members of his craft.

The chemical workers hold jobs that are the direct consequence of increased rationalization and technological advance in industry. Their jobs however, are not low autonomy ones as would be expected since an increase in technology and rationalization is usually associated with a reduction in autonomy.

The chemical workers have clearly prescribed tasks, usually consisting of a regular round of checking switches and reading indicators of various processes. They do not actually control input or output of the work process except indirectly by making certain that the prescribed process is being carried out correctly. As Blauner points out, the chemical worker has personal freedom to set his own pace at which he checks the various parts of processes, and considerable variety. Blauner feels that the source of dignity that the chemical workers have which the automobile workers do not have is the responsibility for the job, and the increased personal freedom and variety.

The chemical worker, unlike the automobile worker, is free from the pressure and fears concerning seasonal lay-offs and regular slumps in the automobile sales that result in widespread lay-offs. This relative

freedom from pressure is the result of the general market conditions which are very satisfactory to the chemical industry. These factors are not directly related to autonomy but are additional reasons for satisfaction with the job.

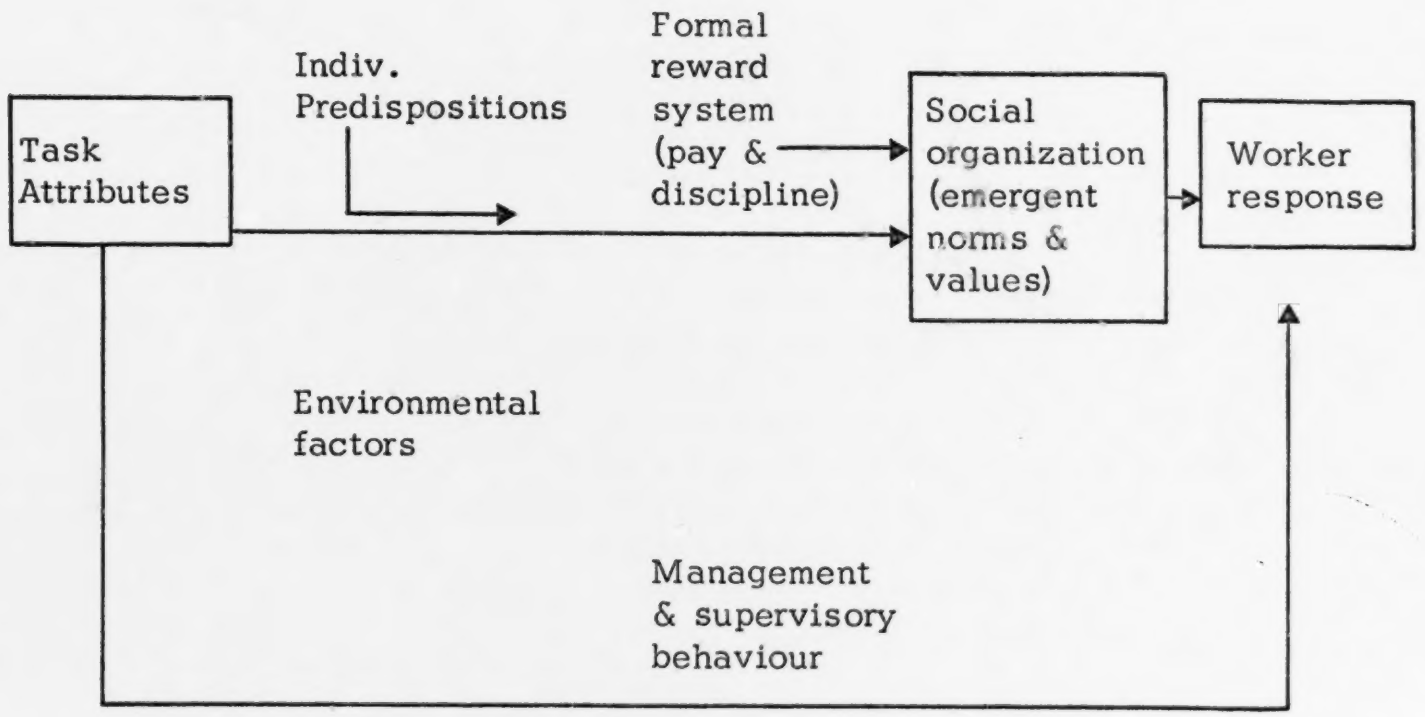
The skilled craftsman is frequently used as another example of the high autonomy job. Today the skilled worker still maintains a high degree of autonomy because of the occupational structure and the economic organization of the craft industries which permits a great deal of mobility. As Blauner points out in his discussion of the skilled craftsmen, "(their) autonomy is expressed in the skilled craftmen's characteristic and characterological resentment of close supervision" (p.175).

The skilled craftsman controls all aspects of the work he is doing and the standards which he uses to guide his work are those internalized from other craftsmen. The skilled craftsman is classically thought of as working in isolation or in his own business. In modern industry he would have to submit to some of the controls of the organization, although this may be very small in comparison to other workers.

3. Turner and Lawrence: Social background, autonomy and job satisfaction

The sample for this study was made up of forty-seven jobs in eleven companies which were not random but chosen to cover a broad range of jobs. (See the list of jobs included and their requisite task index score.)

The authors used the following overall strategy or scheme around which they organized their analysis of forty-seven different occupations: (p.11)



To describe the elements of the task attributes, they modified Homan's descriptive scheme of elements of behaviour to the following: (p.20)

Elements of Task	Activities	Interactions	Mental States	
	Variety (object & motor)	Required interaction	Knowledge & Skill	(prescribed)
	Autonomy	Optional interaction (on or off the job)	Responsibility	(discretionary)

From the descriptive scheme of the elements of behaviour, the authors developed a requisite index (RTA index) which is a weighted total of the elements described above. These elements were scored by field observers. On the basis of the authors' judgement a double weight was assigned to autonomy and variety, while each of the other attributes was given a single weight. In addition to the RTA index scored by the researchers, a perceived index was developed which was formed by the scores on the following questions also giving the double weighting to autonomy and variety. The questions used to measure variety and autonomy were the following: (p.142, Turner and Lawrence)

Scores

26. Do you have variety in your job? (Can you do different things, change methods, location, speed of working and so forth?)

- I always do the same thing on my job; there is no variety. (1)
- I mostly do the same things, but there is a little variety. (3)
- I have to do quite a number of different things on my job. (5)
- There is a fair amount of variety. (7)
- I have to do a lot of different things on my job; there is a great deal of variety. (9)

22. Check the statement which best describes the kind of job you have

- I have no freedom at all to organize my work as I want to. (1)
- I have little freedom to organize my work as I want to. (3)
- I am fairly free to organize my work as I want to. (7)
- I am completely free to organize my work as I want to. (9)

24. Check one of the following items that you think best describes how much of their potential ideas and skills are being used on the job by the people near you working on the same general kind of job as yours.

- Almost none of what they can offer. (1)
- About one quarter of what they can offer. (3)
- About half of what they can offer. (5)
- About three quarters of what they can offer. (7)
- Almost all of what they can offer. (9)

As can be seen from the questions that are used to compile their perceived index of autonomy, autonomy has been operationally defined as: freedom to organize the work and whether the job makes full use of the skills and innovations of the workers. Thus only generally do they measure the items mentioned in their definition of autonomy (p.11 of this paper).

The importance of the perceived index as an intervening variable became apparent to the authors when they found that there was no relationship between job satisfaction and RTA (scored by the researchers) for the total population. However, the perceived index was related to the RTA score and to job satisfaction, which suggests that the perceived index could be a link between the two otherwise unrelated variables of requisite task attributes and job satisfaction. The authors speculate that this relationship could be the result of a general "halo effect", that is, having workers answering all the questions positively since they found no relationship between other test variables. To follow the argument about differing perceptions, the sample was divided for various subpopulations.

a. Attendance and Autonomy

The authors found an overall relationship between the RTA index they developed and attendance. A clear relationship was also found between autonomy and attendance:

> The evidence indicates that job design has a stronger influence on attendance than any of the other variables ... individual characteristics (education, F-scale, age and seniority) and the situation variable measures (foreman satisfaction, union satisfaction, work group satisfaction, and pay) ... . It was also found that of the major attributes making up the RTA index, autonomy and responsibility had the strongest relationship with attendance (p.48, Turner and Lawrence).

JOBS IN SAMPLE RANKED BY REQUISITE TASK ATTRIBUTE INDEX

Job Title	RTA Index Score
Paper Machine Operator	63
Tool and Die Maker	59.4
Loom Repairman	54
Automatic Screw Machine Operator (including setup)	53
Paper Super Calendar Operator (Fine Grades)	52.8
Railroad Sectionman (Maintain Track)	50
Paper Machine Backtender	49
Paper Digester Operator	47.5
Railroad Locomotive Airbrake Repairman	46
Aluminum Extrusion Inspector	44
Aluminum Foil Roller	44
Automatic Screw Machine Operator	42.5
Railroad Blacksmith	42
Generator Armature Winder	41
Aluminum Remelt Furnace Tender	40.9
Aluminum Extrusion Press Operator	39
Telephone Wireman and Pole Climber	37.9
Aluminum Flat Mill Operator	36
Hand Pastry and Roll Maker	35.4
Paper Trimming Machine Operator	35
Textile Tenting Machine Operator	33.2
Bakery Order Filler and Shipper	32
Paper Super Calendar Operator (Coarse Grades)	31
Washing Machine Pump Assembler	30
Multiple Utensil Fabricator	29.1
Railroad Track Rebuilding Crewman	29
Railroad Car Airbrake Repairman	27.7
Cake Oven Operator	26
Extrusion Cut-off Saw Operator	26
General Warehouseman and Fork Lift Truck Operator	25.9
Can Packer	25.2
Hardware Polisher	25
Tin-Plate Slitting Machine Operator	24
Bread Wrapping Machine Operator	23.6
Foundry Molder	23.3
Warehouse Order Picker	23
Broom Assembly Line Operator	20
Automatic Punch Press Operator	19.2
Bottling Line Operator	19
Tin-Plate Paint Drying Line Unloader	17.4
Automatic Brush Twisting Machine Operator	17.3
Heavy Hydraulic Press Operator	17
Washing Machine Wringer Assembly Line Operator	15
Automatic Washing Machine Assembly Line Operator	14.8
Plastic Injection Molding Machine Operator	12.8

Source: Turner and Lawrence, p.33

AUTONOMY AND ATTENDANCE

(p.40)

Attendance	High	Medium	Low	
High (199)	106	64	29	(autonomy equally divided into threes)
Low (204)	61	70	73	
	167	134	102	

$x^2 = 31.33$ p. < .001

b. Job Satisfaction and Autonomy

No overall relationship was found between job satisfaction and the RTA index score, contrary to the expectations of the researchers. In breaking down the components of the work satisfaction index, work group satisfaction (measured by questionnaire) was related to one of the components of the RTA index, autonomy ($x^2 = 7.92$ p. < .002) (There was no significant statistical relationship between work group satisfaction and RTA index; however, work group satisfaction was highly correlated with the general satisfaction score.) The researchers do not give any explanation of the relationship between autonomy and work group satisfaction, other than that this is a characteristic of the type of jobs that were chosen to be studied.

c. The Effect of Town and City Subcultures

In an attempt to explain why, particularly the relationship between job satisfaction and RTA index which was expected was not found, the researchers controlled their data by several attributes of their sub-populations. One of the most important and informative controls was one by religious and rural-urban differences. These two dimensions were combined and used to classify the predominant ethos of the community from which the industrial firm drew its work force. Their sample broke down as follows, along these two dimensions:

CULTURAL SETTINGS FOR 470 WORKERS

(p.71)

	Urban	Rural	Total
Protestant	0	161	161
Catholic	137	65	202
Mixed	107	0	107
Total	244	226	470

The researchers felt they were measuring differences in expectations and predispositions brought to the job that were the result of different religious and community backgrounds. Those falling in the mixed groups were not included in the tests for the different variables.

DIFFERENCES

1. Town workers were much more likely to be on higher scoring tasks than city workers.

2. The relationship between task and attendance was very strong for town and showed no significance for city (autonomy not specified).

3. There is still no relationship of significance between job satisfaction and task attributes, as can be seen from the accompanying chart.

4. There is a strong positive relationship between object variety and job satisfaction for town, no relationship for city.

5. There is no significant relationship between motor variety and job satisfaction for town and there is a negative relationship for the city.

6. Relationships with general background factors: (p.111 summarized)

1. Age was positively related to task attributes for all workers, negatively to pay for city workers.
2. Seniority was positively related to job satisfaction for town workers, to task attributes for all workers, to pay for town workers and negatively to pay for city workers.
3. Education was negatively related to job satisfaction for city workers, positively to task attributes and pay for all workers.
4. F-scale scores were positively related to job satisfaction for all workers and to pay for town workers.

IMPLICATIONS FOR RETRAINING WORKERS

The transfer from a high autonomy job (for example, farmer or railroad section man) to a low autonomy job in a factory would result in a great deal of dissatisfaction. An attempt would have to be made to match the expectations of the retrainee on such a factor as autonomy with the job he is being trained for.

The expectations of the worker would be shaped by his previous job experience and socio-economic background,and these would have a strong influence on his satisfaction with the new job.

Whether the retraining school should be structured autonomously is not clear. It would be expected that the worker with high expectations for autonomy would be dissatisfied in an authoritarian school. However, many of the jobs characterized by high autonomy are the result of a strict apprenticeship period.

Conversely, the worker with expectations for low autonomy would also be dissatisfied if placed in a 'democratic' (as opposed to authoritarian) school.

ASSOCIATIONS BETWEEN JOB SATISFACTION AND TASK ATTRIBUTES FOR TOWN AND CITY WORKERS

Task Attributes	Association with Job Satisfaction		
	Town	City	Total Population
Variety Index	+	-	0
Object Variety	+	0	0
Motor Variety	0	-	0
Autonomy Index	0	0	0
Interaction Index	+	0	0
Required Interaction	+	-	0
Optional Interaction On-the-Job	0	0	0
Optional Interaction Off-the-Job	+	0	+
Learning Time	+	0	+
Responsibility Index	+	0	C
Ambiguity of Remedial Action	+	0	0
Time Span of Discretion	0	0	+
Probability of Serious Error	0	0	0
Cycle Time	+	0	0
Task Identity	0	0	0

0 = no significant relationship
+ = positive relationship significant at $p < .05$ level
- = negative relationship significant at $p < .05$ level
C = curvilinear relationship significant at $p < .10$ level

Source: Turner and Lawrence, p.75

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